

### LISTING OF THE CLAIMS

This listing of the claims will replace all prior versions, and listings, of claims in the application:

1. (previously presented) A method of catalyzing an enantioselective oxidation reaction of an oxidizable, chiral organic compound composed of a racemic mixture of a first enantiomer and a second enantiomer, comprising:

- a) contacting the organic compound with:
  - i) an oxidizing agent, and
  - ii) a catalyst comprising a palladium composition and a selected enantiomer of a chiral ligand containing two or more tertiary nitrogen atoms that are separated by two or more linking atoms, thereby
- b) selectively oxidizing the first enantiomer of the organic compound so as to produce (i) an oxidized organic compound and (ii) a mixture of the first and second enantiomers in which the second enantiomer represents at least 50% of the mixture.

2. (original) The method of Claim 1 wherein the organic compound is selected from the group consisting of alcohols, thiols, amines and phosphines.

3. (original) The method of Claim 1 wherein the oxidizing agent is selected from the group consisting of molecular oxygen, benzoquinone, Cu (I) salts, and Cu (II) salts.

4. (original) The method of Claim 3 wherein the oxidizing agent is molecular oxygen.

5. (original) The method of Claim 1 wherein the oxidizing agent is used in a stoichiometric amount.

6. (previously presented) The method of Claim 1 wherein said contacting is conducted in an organic solvent.

7. (canceled)

8. (previously presented) The method of Claim 1 wherein the palladium composition is a palladium (II) complex.

9. (original) The method of Claim 8 wherein the palladium (II) complex is selected from the group consisting of  $\text{Pd}(\text{OAc})_2$ ,  $\text{Pd}_2(\text{dibenzylideneacetone})_3$ ,  $\text{PdCl}_2$ ,  $\text{Pd}(\text{CH}_3\text{CN}_2)\text{Cl}_2$ ,  $\text{Pd}(\text{PhCN}_2)\text{Cl}_2$ ,  $[(\text{allyl})\text{PdCl}]_2$ ,  $\text{PdCl}_2$  (cyclooctadiene),  $\text{Pd}(\text{OCOCF}_3)_2$ , and  $\text{Pd}(\text{norbornadiene})\text{Cl}_2$ .

10. (canceled)

11. (canceled)

12. (previously presented) The method of Claim 1 where the second enantiomer represents at least 60% of the mixture.

13. (previously presented) The method of Claim 12 where the second enantiomer represents at least 90% of the mixture.

14. (canceled)

15. (canceled)

16. (canceled)

17. (previously presented) The method of Claim 1 wherein the organic compound is a secondary alcohol.

18. (original) The method of Claim 1 wherein the enantioselective oxidation reaction is an enantioselective Wacker-type cyclization reaction.

19. (original) The method of Claim 1 wherein the enantioselective oxidation reaction is an enantioselective aromatic oxidation reaction.

20. (original) The method of Claim 1 wherein the enantioselective oxidation reaction is the enantio-group differentiation of meso diols.

21. (original) The method of Claim 1 wherein the enantioselective oxidation reaction is an enantioselective oxidative [4+2] cycloaddition reaction.

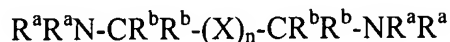
22. (original) The method of Claim 1 wherein the enantioselective oxidation reaction is a C-C bond forming cyclization reaction.

23. (original) The method of Claim 1 wherein the enantioselective oxidation reaction is a cyclization reaction.

24. (original) The method of Claim 23 wherein the organic compound contains an olefin tethered to a nucleophilic atom.

25-42. (canceled)

43. (previously presented) The method of Claim 1 wherein the chiral ligand has the structure



wherein:

each  $R^a$  is independently selected from the group consisting of alkyl, cycloalkyl, cycloheteroalkyl, aryl, heteroaryl and silyl;

X is  $-CR^bR^b-$  or a heteroatom;

n is an integer from 0-2; and

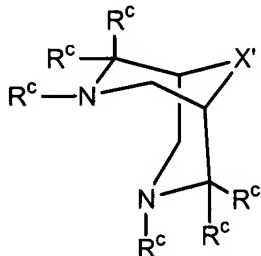
each  $R^b$  is independently selected from the group consisting of hydrogen, alkyl, cycloalkyl, cycloheteroalkyl, aryl, heteroaryl and silyl,

wherein two or more of  $R^a$  and  $R^b$  can be taken together to form one or more cyclic structures.

44. (previously presented) The method of Claim 43 wherein n is 1 or 2.

45. (previously presented) The method of Claim 43 wherein the chiral ligand is tetracyclic.

46. (previously presented) The method of Claim 1 wherein the chiral ligand has the structure



wherein: each  $R^c$  is independently selected from the group consisting of hydrogen, alkyl, cycloalkyl, cycloheteroalkyl, aryl, heteroaryl and silyl, with the proviso that the  $R^c$  substituents bound to the nitrogen atoms are other than hydrogen; and  $X'$  is selected from the group consisting of  $-O-$ ,  $-S-$ ,  $-N(R^d)-$ ,  $-C(R^d)_2-$ , in which each  $R^d$  is independently selected from the

group consisting of hydrogen, alkyl, cycloalkyl, cycloheteroalkyl, aryl, heteroaryl and silyl, wherein two or more of R<sup>c</sup> and R<sup>d</sup> can be taken together to form one or more cyclic structures.

47. (currently amended) The method of Claim 46 wherein X' is  $[[is]] -C(R^d)_2 -$ .

48. (previously presented) The method of claim 43 wherein R<sup>a</sup> and R<sup>b</sup> are independently selected from the group consisting of branched, unbranched, and cyclic C<sub>1</sub>-C<sub>24</sub> alkyl optionally substituted with at least one substituent.

49. (previously presented) The method of Claim 48, wherein the at least one substituent is selected from hydroxyl, cyano, alkoxy, =O, =S, nitro, halogen, haloalkyl, heteroalkyl, amino, and sulfhydryl.

50. (previously presented) The method of Claim 48 wherein R<sup>a</sup> and R<sup>b</sup> are independently selected from the group consisting of branched, unbranched, and cyclic C<sub>1</sub>-C<sub>6</sub> alkyl optionally substituted with at least one substituent.

51. (previously presented) The method of Claim 50 wherein the at least one substituent is selected from hydroxyl, cyano, alkoxy, =O, =S, nitro, halogen, haloalkyl, heteroalkyl, amino, and sulfhydryl.

52. (previously presented) The method of Claim 1 wherein the chiral ligand is (-)-sparteine.